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The Future of the Connected Home
Adding Value to Broadband QoE

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The number of high-bandwidth applications, such as video streaming, remote working, and gaming, have multiplied within the home. In turn, broadband service providers have been called upon to differentiate their service offerings and effectively deliver a high-quality broadband experience for the end-user.

Many service providers are ready to move beyond reliable connectivity and speed. They are collaboratively turning their attention towards the adoption of broadband value-added services (VAS) to enhance the customer experience.

According to a new report by Omdia and the Broadband Forum, nearly three quarters of the 111 global broadband service providers (BSP) surveyed have identified broadband application prioritization as a key focus in the future of the managed smart home. This is because consumers are becoming increasingly aware that higher speeds and bandwidth are not enough to enjoy the full potential of their devices and services within the home. They are looking to pay and subscribe for broadband packages that include VAS and applications that help maximize their broadband experience with an element of control.

A Win-Win for the BSP and Customer

The responsibility of broadband service providers is to satisfy their customer needs. One of the main challenges they face when managing the connected home is catering to the wide spectrum of devices it brings with it. Consumers expect their service providers to deliver on the concept of the smart home, whilst at the same time guaranteeing reliable, fast broadband services with the appropriate QoE that the applications they individually use demand.

Services such as home broadband, Wi-Fi speed and reliability guarantees, and speed testing are already prominent and expected as part of existing broadband offerings, with more than 60% of service providers stating they had already deployed these services. But within the constantly changing connected home, a much wider variety of services is required.

Security is a key concern for both broadband service providers and end-users, as work, education, and leisure continually migrate into the virtual world. The majority of providers in the broadband ecosystem have also begun adhering and working to company-level sustainability commitments, requiring metrics such as energy efficiency and power-savings measurements. More than a quarter of service providers have advised that they plan to deploy these applications within their broadband packages, along with the likes of home working and Matter-enabled IoT value-added services in the home. The array of services that can now be offered presents today's broadband service provider with the opportunity to not only improve the overall Quality of Experience (QoE), but also to seize the new revenue opportunities they promise.

By integrating a wide range of services onto CPEs, service providers can truly differentiate and tailor their service offerings to their diverse customer smart homes while also having room to offer premium services to the likes of gamers and remote workers. These users may be more willing to spend additional money every month on lower-latency or greater reliability on an application basis. But they must first navigate the obstacles that could slow down the effective delivery of the VAS and applications.

On-boarding Issues

For broadband service providers, having to integrate different services and technologies from different vendors is one of (if not the greatest) challenges they face when implementing VAS. Traditionally, launching a new service can take months of integration involving numerous different hardware vendors, chip sets, and operational support system (OSS) platforms. This can make launching new services and applications costly and technically challenging, which is a clear factor for service providers' time to market of new products.

When installing new services onto a CPE, broadband service providers must consider the typical firmware upgrade cycles that need to take place. This can take anywhere from 9 to 18 months to complete when we consider the various steps involved, such as gathering requirements, upgrading the monolithic firmware image, internal testing, customer testing, and phased roll-out to production. And by the time the software has been integrated it may need a further update, which involves even more time and disruption. Also, when integrating applications and external software from multiple third-party providers, they must be able to run without interfering with each other in one interoperable ecosystem. For example, if a third-party software provider is to make a change to its software, there could be a snowball effect on the rest of the services integrated onto the CPE device.

The velocity of targeted new services coming to market is only going to increase in the short to mid-term. To meet this, many operators are looking at their service platforms and home gateways. They are evaluating the efficiency of devices that are reliant to one or two firmware upgrades a year versus the flexibility of "application aware" gateways with software driven secure application containers or dockers.

Operators have collectively agreed that reduced fragmentation and propriety technology at the chipset, CPE, and software platform level would significantly help to drive greater innovation. As a result, more than a quarter of respondents stated that they plan to move to a more standards based and containerized approach. This will help them efficiently deliver new home applications and features over a Wi-Fi platform, such as a CPE or other gateway.

Containerization increases the speed to market of new services versus waiting for monolithic firmware upgrades and adding new bundles accordingly. By using a containerized framework, new services can be unlocked by adding software to a CPE without the need to upgrade any firmware.

Standardizing Value-added Services

The interconnection and interoperability of multiple devices, services, and apps, ranging from security to home automation, is essential to deriving true value from the connected home. Standardizing the integration and management of the connected home and creating an interoperable ecosystem that is easy and effective to manage offers multiple benefits to broadband service providers, consumer electronics manufacturers, and application providers. For example, it can ensure that both applications and software, or hardware and chip sets, can be quickly upgraded at any time without the need for further costly integration work and speed up the time to market of the new products.

Industry standards will continue to play a significant role moving forward when it comes to making deployments easier, increasing multi-vendor network interoperability, and supporting the wider broadband community. With this interoperable and standardized ecosystem, operators can opt to choose from the "best-of-breed" technology and software developer partners to enhance their connected home platforms. This will enable them to take full control over the ecosystem they create and enjoy the benefits of differentiation in the market.

Recognized Standards for Future Advancements

The industry needs to work towards not only reducing the fragmentation of CPE hardware and software platforms, but also developing an open standard application platform. It is clear that broadband service providers have recognised how vital the need to standardize their products and services is to enable VAS. For example, 85% of survey respondents said they had already deployed Broadband Forum's User Services Platform (USP) or planned to within the next 6-18 months. USP was developed to help deploy, implement, and manage all aspects of the smart home. The data model, architecture, and communications protocol enable broadband service provider remote management of devices in the home network, including the Wi-Fi home gateway, independent of the vendor that manufactured the device.

A seamless implementation of third-party party applications is vital for service providers to satisfy customer needs and differentiate their service offerings, all while increasing broadband ARPU. To enable this, they must migrate and evolve their systems in coordination with open standards and open-source technologies. New service use cases - such as remote working, security, and home automation, are essential to address the rising consumer demand and expectations regarding the connected home. It is only by harnessing recognized standards and open frameworks that the door can be opened to an easier implementation and management of these services.